



SAPIENZA, UNIVERSITY OF ROME
Doctoral School of Economics

FINANCE (THEORY AND APPLICATIONS) – PART 2

Academic Year 2020-2021

(Teacher: Prof. Immacolata Oliva)

SYLLABUS:

This course is focused on the derivative pricing problem in the main financial markets, with particular emphasis on the computational aspects.

In particular, we will analyze the probabilistic tools necessary to introduce the stochastic calculus, describe the financial model, and find a solution of suitable (stochastic or partial) differential equations associated to the model itself.

Finally, we will concentrate on numerical techniques commonly used to face and solve the derivatives' evaluation issue, when the underlying evolves according to the models previously presented. Such approaches are based on some discretization methods, useful to obtain the aforementioned solutions.

MAIN TOPICS:

Introduction to Matlab

An overview on SDE in finance

The Black-Scholes-Merton model

Option pricing: finite differences methods and Monte Carlo simulations